



DR. HOMI BHABHA BALVAIDNYANIK SPARDHA

TARGET : STAGE – I

QUESTION BANK

HOMI BHABHA Young Scientist Exam CHEMISTRY CLASS : IX

ALLEN Mumbai City Office :

KK Solitaire, Plot No. 278, Opp. Vanita Vikas School, Near Railway Station, Ghatkopar East

Mumbai : 400077 | ☎ +022-62423699

E-mail : mumbai@allen.ac.in | 🌐 www.allen.ac.in

Corporate : "SANKALP", CP-6, Indra Vihar, Kota (Rajasthan)-324005

☎ +91-744-2757575 | ✉ info@allen.ac.in

STUDY SMARTER NOT HARDER



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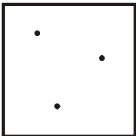
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1. MATTER AND ITS COMPOSITION

- Which of the following is accompanied by cooling?
(1) vaporization (2) evaporation
(3) condensation (4) none of these
- Intermolecular force of attraction is maximum in
(1) BEC state (2) Liquids
(3) Gases (4) Solids
- Which of the following statements is not correct?
(1) Density of ice is less than the density of water
(2) To convert a temperature on the Kelvin scale to Celsius scale, subtract 273 from the given temperature
(3) To convert a temperature on the Celsius scale to Kelvin scale, add 273 to the given temperature.
(4) Vapourization of a liquid causes cooling
- If temperature of any gas is increased its volume
(1) increases (2) decreases
(3) remains same (4) none of above
- An ordered, repeating three dimensional arrangement of particles makes up a
(1) crystalline solid (2) amorphous solid
(3) can be both (1) and (2) (4) none of above
- Escape of gas molecules from a small hole is called
(1) diffusion (2) effusion
(3) concentration (4) mobility
- Which is the one property of a suspension that is different from that of a solution or a colloid?
(1) At the particles of a suspension will settle out
(2) The particles of a suspension reflect light
(3) A suspension is always clear
(4) Suspensions are colourless
- Process in which vapour molecules are recaptured by molecules at liquid surface is called as
(1) evaporation (2) sublimation
(3) condensation (4) boiling
- In air nitrogen gas acts as
(1) solute (2) solvent
(3) gaseous solute (4) aqueous solute
- On increasing temperature of amorphous solid they
(1) melt at specific temperature
(2) soften gradually
(3) break at specific temperature
(4) boil at specific temperature
- The amount of heat energy required to change 1 kg of solid into liquid at its melting point at atmospheric pressure is called as
(1) melting point (2) latent heat of fusion
(3) boiling point (4) latent heat of vaporization
- Which of the following is correct about solid carbon dioxide?
(1) It is used in theatres to give special effects
(2) It is extremely cold substance
(3) It is used to keep freeze food and to keep ice cream cold
(4) All of them
- Alum purifies water due to
(1) Adsorption (2) Peptisation
(3) Coagulation (4) Dialysis
- The Zig-Zag random motion of colloidal particle in a dispersion medium is called as
(1) Brownian motion (2) Tyndal effect
(3) Electrophoresis (4) Electro-osmosis
- On heating a liquid, its surface tension
(1) increases (2) decreases
(3) remains same (4) to reduced to zero
- Solubility of Na_2SO_4
(1) increases with increase in temperature
(2) decreases with increase in temperature
(3) no effect on solubility with change in temperature
(4) none of above
- Iodine and salt mixture can be separated through
(1) simple distillation (2) simple filtration
(3) sublimation (4) fractional distillation
- In order to separate colors, dyes and amino acids, useful method will be
(1) crystallization (2) centrifugation
(3) filtration (4) chromatography
- In amalgams solvent is
(1) gas (2) liquid
(3) solid (4) none of these
- An example of a colloid which is an emulsion is
(1) Wipped cream (2) Mayonnaise
(3) Fog (4) Gelatin
- Fractional distillation can
(1) not separate liquids whose boiling points are close
(2) separate liquids whose boiling point are close
(3) separate liquids whose boiling points are very high
(4) all of these

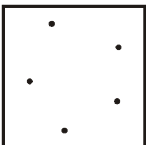
22. Material which can retain their strength above 550°C are known as
(1) ceramics (2) refractories
(3) metals (4) non-metals
23. Fog is a solution of
(1) air in water vapours
(2) air in air
(3) vapours in vapours
(4) water vapours in air
24. According to Lord Kelvin particles in a gas will stop moving and gas will have zero volume at temperature in $^{\circ}\text{C}$ is
(1) -373 (2) -273 (3) -332 (4) -700
25. Carbon atoms are arranged in planar layers in
(1) mercury (2) tin
(3) graphite (4) diamond
26. Metallic lattice is surrounded by sea of
(1) Protons (2) electrons
(3) neutrons (4) all of above
27. Relative molecular mass of a substances can be found by using
(1) relative spectrometer
(2) mass spectrometer
(3) weight spectrometer
(4) radius spectrometer
28. When gas liquify, molecules lose kinetic energy and experience increase
(1) volume (2) molecular weight
(3) pressure (4) forces of attraction
29. Molecular solids needs very lower temperature to break weak
(1) intermolecular forces
(2) dipole-forces
(3) hydrogen bonding
(4) all of above
30. There are strong attractive forces between metal ions and delocalized electrons which gives
(1) high tensile strength
(2) hardness
(3) color
(4) both (1) and (2)
31. Commercially concentrated HCl is
(1) 40% w/w (2) 50% w/w
(3) 37% w/w (4) 80% w/w
32. Anhydrous agent, which is used to remove water from distillate ethanol may be
(1) Iodine (2) Hydrocarbon
(3) Calcium chloride (4) Naphthalene
33. When NaCl is dissolved in water, negative end of water molecules is attracted towards.
(1) Cl (2) H (3) He (4) Na
34. The substance which gives colloidal solution in water is
(1) sugar (2) soap
(3) alum (4) plaster of paris
35. If a substance decomposes when heated to its boiling point, then suitable method to separate is
(1) simple distillation (2) fractional distillation
(3) vacuum distillation (4) crystallization
36. In chromatography, different pigments can be separated through
(1) solubility differences
(2) diffusion differences
(3) attraction among particles
(4) capillary action of chromatography paper
37. To separate components of liquid air, useful procedure is
(1) centrifugation (2) separating funnel
(3) fractional distillation (4) simple distillation
38. Rare freezing of sea water can be explained through
(1) lowering freezing point of water
(2) presence of impurities like salts
(3) presence of breathing animals in it
(4) elevation of boiling point
39. The process of making colloidal solution from the precipitate is called
(1) coagulation (2) vulcanization
(3) peptization (4) flocculation
40. The inter particle forces in solid hydrogen are
(1) Hydrogen bonds (2) Covalent bonds
(3) Coordinate bond (4) Vander-Waal's forces
41. For ultrafiltration, ordinary filter paper is impregnated in a solution of
(1) Collodial (2) Starch
(3) Gum (4) Silicic acid
42. In presence of crystals of solute a supersaturated solution is
(1) not stable (2) stable
(3) cannot be made (4) none of above

43. At constant temperature, when pressure is decreased average kinetic energy of gas molecules
(1) increases (2) remains unchanged
(3) decreases (4) becomes two fold
44. Gases are liquefied under
(1) high pressure, high temperature
(2) high pressure, low temperature
(3) low pressure, high temperature
(4) low pressure, low temperature
45. What makes water such a good solvent?
(1) Water is a good solvent because it is a negative charged ion
(2) Water is such a good solvent because it repels most molecules
(3) Water is such a good solvent because it is such a small molecule
(4) Water is a good solvent due to its polarity and small molecular size
46. Which among the pairs are separated by using the principle of dissolution in a suitable solvent?
(1) SO_2 and N_2O_5 , KOH as solvent
(2) SO_2 and NO_2 , KOH as solvent
(3) SO_2 and N_2O_3 , KOH as solvent
(4) SO_2 and NO, KOH as solvent
47. Addition of potassium nitrate to ice results in
(1) increase in melting point
(2) decrease in melting point
(3) change in colour of ice
(4) both (1) and (3)
48. In which of the following uses of nitrogen, its characteristic property of inert nature is not explained ?
(1) It is used to preserve biological specimen
(2) It dilutes the activity of oxygen present in the atmosphere
(3) It is used to preserve food materials
(4) Nitrogen is used for the synthesis of ammonia
49. The bulb of a thermometer when dipped in petrol and then taken out, the level of the mercury thread in the thermometer
(1) starts falling
(2) starts rising
(3) remains at the same level
(4) initially falls and then rises
50. A gaseous mixture of A, B and C is passed through water. The gaseous mixture of B and C remains. If this gaseous mixture of B and C is subjected to sudden expansion followed by application of high pressure, B liquefies leaving behind C. Identify the set of gases.
(1) SO_3 , NO_2 , O_2 (2) Cl_2 , SO_2 , H_2
(3) CO_2 , CO, N_2 (4) NH_3 , N_2 , H_2
51. In which of the following cases, cooking is very slow?
(1) pressure cooker at sea level
(2) pressure cooker at higher altitude
(3) open vessel at sea level
(4) open vessel at higher altitude
52. A mixture of three liquids X, Y and Z when subjected to fractional distillation, the order in which the vapour condense back to liquid state in fractionating tower is Y, X and Z. Arrange them in the correct order of vapour pressures.
(1) $Z < X < Y$ (2) $Y < X < Z$
(3) $X < Z < Y$ (4) $X < Y < Z$
53. Arrange the following changes of energy during following phase transition in a proper order:
 $\text{Ice}(0^\circ\text{C}) \rightarrow \text{Water}(50^\circ\text{C}) \rightarrow \text{Ice}(0^\circ\text{C})$
(a) Potential energy increases and kinetic energy remains constant
(b) Potential energy decreases and kinetic energy increases
(c) Potential energy increases and kinetic energy remains constant
(d) Potential energy increases and kinetic energy decreases
(1) (c), (b), (d), (a) (2) (a), (c), (b), (d)
(3) (a), (c), (d), (b) (4) (c), (d), (a), (b)
54. Among the following, identify the substance in which molecules possess vibratory, rotatory, and translational motions in all directions except in one direction.
(1) Bromine (2) Iodine
(3) Ammonia (4) Silicon dioxide
55. At melting point -
(1) Kinetic energy remains constant and potential energy increases
(2) Kinetic energy increases and Potential energy remains constant
(3) Both potential and kinetic energy increases
(4) Potential energy increases with a decrease in kinetic energy

56. Which among the following statements is true?
- The rate of evaporation in a coastal area is less when compared to a non-coastal area.
 - The rate of evaporation in a non-coastal area is less when compared to a coastal area.
 - In both the areas the rate of evaporation is the same
 - None of the above
57. The order of vapour pressures of four solids is : $P \ll R < Q < S$. Which of the following has the maximum tendency to sublime?
- P
 - Q
 - R
 - S
58. Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends she got confused. Help her to identify the correct set of conditions.
- Low temperature, low pressure
 - High temperature, low pressure
 - Low temperature, high pressure
 - High temperature, high pressure
59. If a gas is expanded at constant temperature
- the pressure increases
 - the kinetic energy of the molecules remains the same
 - the kinetic energy of the molecules decrease
 - the number of molecules of the gas increases
60. Artificial rain is based on the principle of
- Coagulation
 - Electro phoretic effect
 - Emulsification
 - Tyndal effect
61. The fluorescent tubes and neon sign bulbs glow because of
- presence of charged particles
 - high density of gases
 - high temperature
 - high applied voltage
62. Liquid drops assume spherical shape because
- A sphere has maximum surface area
 - A sphere has minimum surface area
 - Sphere is symmetrical in shape
 - None of these
63. Identify the methods by which the individual components of mixture containing water, potassium nitrate, sodium chloride, alcohol and carbon tetrachloride (CCl_4) can be separated by
- separating funnel, fractional distillation, fractional crystallization and distillation
 - fraction distillation, distillation and fractional crystallization
 - separating funnel, fractional distillation, filtration and distillation
 - separating funnel, fractional distillation, sedimentation and decantation
64. A chromatogram of pure samples of food colours X, Y and Z is given in the following illustration 1. Three samples of same food material A, B and C are analysed for purity, with the help of the chromatogram in illustration (2) Identify the impure sample.
- 

(i)

X Y Z



(ii)

A B C
- (1) A (2) B (3) C (4) A and C

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
A.	2	4	4	1	1	2	1	3	2	2
Q.	11	12	13	14	15	16	17	18	19	20
A.	2	4	3	1	2	2	3	2	3	2
Q.	21	22	23	24	25	26	27	28	29	30
A.	2	2		2	3	2	2	4	4	4
Q.	31	32	33	34	35	36	37	38	39	40
A.	3	3	4	2	3	1	3	1	3	4
Q.	41	42	43	44	45	46	47	48	49	50
A.	1	1	2	2	4	4	2	4	1	4
Q.	51	52	53	54	55	56	57	58	59	60
A.	4	3		1	2	1	4	3	2	1
Q.	61	62	63	64						
A.	1	2	1	3						

2. ELEMENT, MIXTURE & COMPOUND

- Brass is an alloy, are made up of
(1) Cu, Zn (2) Zn, Ni
(3) Co, Zn (4) Fe, CO
- Physical properties are individual and does not show result of constituting element in
(1) Metal (2) Non-Metals
(3) Mixture (4) Compounds
- Most common element in air is
(1) Hydrogen (2) Nitrogen
(3) Oxygen (4) Carbon
- Mixture can be converted to compounds through
(1) Chemical change (2) Physical change
(3) High pressure (4) Catalytic reactions
- Other than Carbon, Nitrogen, Oxygen and Hydrogen another element of tree is
(1) Calcium (2) Chromium
(3) Phosphorous (4) Nickel
- Praseodymium is the
(1) Longest name in periodic
(2) Most volatile metal table
(3) Recently discovered
(4) Excellant conductor of excellent noble gas
- Element un-common to both living things and non living things include
(1) Oxygen (2) Carbon
(3) Silicon (4) Nitrogen
- An oil molecule may contain
(1) over 10 atoms
(2) over 100 atoms
(3) over 1000 atoms
(4) over 10 molecules of its distillate
- A compound results from the chemical combination of
(1) two or more atoms
(2) two or more non-metals
(3) two or more metalloids
(4) both (1) and (2)
- Other than oxygen and calcium, the earth crust is made up of
(1) Silicon (2) Iron
(3) Aluminium (4) All of these
- Which of the following are considered pure substance?
(1) Elements
(2) Both element and compounds
(3) Compounds
(4) Neither element nor compounds
- Which of these substance is an example of a solution?
(1) Brass (2) Milk
(3) Mercury (4) Concrete
- Which of the following is an inorganic compound?
(1) Rust (2) Carbohydrates
(3) Plastics (4) Nucleic acids
- Boiling point, melting point and density are some _____ of an element.
(1) non reactive properties
(2) physical properties
(3) chemical properties
(4) pure properties
- Pure water can be seperated from inky water by simple distillation. This is because
(1) water and ink have same boiling point
(2) water and ink have different boiling point
(3) ink evaporates leaving ink particles behind (4) ink evaporates leaving water behind
- An element is a pure substance in which there are how many kinds of atoms?
(1) two kinds of atom (2) four kinds of atoms
(3) three kinds of atom (4) one kinds of atom
- The physical properties of compounds does not include
(1) melting point (2) density
(3) reaction of light (4) Color
- How do elements joins to forms compounds?
(1) Randomly
(2) In a specific mass ratio
(3) in a ratio of 1 to 8
(4) as the scientist plans it
- How do the properties of a compound compare with properties of the element that make up compound different ?
(1) Only physical properties are same
(2) Only chemical properties are same
(3) All the properties are identical
(4) The properties are different
- Which of the following is the process in which particles of substance separate and spread evenly throughout a mixture?
(1) Filtration (2) Dissolving
(3) Concentration (4) Distillation
- In which of the following are particles of two or more substance evenly mixed so they appear to be a single substance?
(1) A compound (2) A mixture
(3) Solution (4) An element
- What is pure substance called, which is made of two or more elements that are chemically combined?
(1) Solution (2) Compound
(3) Mixture (4) Element

23. What is formed when particles of two or more substance are distributed evenly among each other?
 (1) A compound (2) Solubility
 (3) A solution (4) Element
24. How is a compound different from a mixture?
 (1) Compound have two ore more components
 (2) Each substance in a compound loses its property
 (3) Compounds are and commonly found in nature
 (4) Solid, liquid, gases can form compound
25. During what type of reaction do the atoms of two or more elements joined together to form compound?
 (1) Reaction and acid
 (2) Physical reaction
 (3) Chemical reaction
 (4) Chain reaction
26. When materials combines to form a mixture, they
 (1) keep their original properties
 (2) react to form new substance with new properties
 (3) Combines in a specific ratio
 (4) Always change their physical state
27. How would a compound with pH of 9 be classified?
 (1) organic (2) acidic
 (3) inorganic (4) basic
28. When iron filings and powered sulphur are mixed together in a china dish?
 (1) Heterogenous mixture results
 (2) Constituent present can easily be seen
 (3) Constituent can be separated by a magnet
 (4) All the above are correct
29. To prepare iron sulphide, by heating a mixture of iron filling and sulphur powder, we should use a
 (1) copper dish (2) watch glass
 (3) china dish (4) petri dish
30. The reaction between iron and sulphur is accompanied by
 (1) Evolution of light (2) absorbtion of heat
 (3) release of heat (4) both (1) and (3)
31. When magnet is rolled in the compound of iron sulphide then
 (1) Iron particles are attracted towards the magnet
 (2) Iron sulphide dings to the magnet
 (3) Iron sulphide does not dings to the magnet
 (4) None of the above
32. In laboratory, what precaution has to be taken with CS_2 ?
 (1) Kept away from flame
 (2) Kept away from carbon
 (3) Kept away from distilled water
 (4) Kept away from iron sulphide
33. A magnet is repeatedly moved closely over a mixture of iron powder and sulphur powder which of the following statement is false
 (1) Iron powder is attracted towards magnet
 (2) Sulphur powder is left behind
 (3) Black FeS will be formed
 (4) Iron powder and sulphur powder are separated
34. Four student A, B, C and D added CS_2 to (i) A mixture of iron filing and sulphur and (ii) iron sulphide. They made the following observation
 Student A \rightarrow Iron dissolved in CS_2 in case (i) but iron sulphide did not dissolve in CS_2 (ii)
 Stdent B \rightarrow Iron sulphide dissolved in CS_2 whereas neither iron nor sulphur dissolved in the mixture
 Student C \rightarrow Sulphur dissolved in CS_2 form the mixture of iron and sulphur but iron sulphide did not dissolve
 Student D \rightarrow Sulphur, in the mixture of iron and sulphur, as well as iron sulphide were solution in CS_2
 The correct observation is that of student
 (1) A (2) B (3) C (4) D
35. Sample (X) is a mixture of iron and sulphur. On separately heating sulphur in excess of air, (Y) is formed which of the following is true for (X) and (Y) respectively.
 (1) Heterogeneous, Homogenous
 (2) Heterogeneous, Heterogeneous
 (3) Homogeneous, Heterogeneous
 (4) Homogeneous, Heterogeneous
36. The correct representation for the formation of iron sulphide from a reaction between iron and sulphur on heating is
 (1) $2\text{Fe} + \text{S} \xrightarrow{\Delta} \text{Fe}_2\text{S}$
 (2) $2\text{Fe} + 2\text{S} \xrightarrow{\Delta} \text{Fe}_2\text{S}_2$
 (3) $2\text{Fe} + 3\text{S} \xrightarrow{\Delta} \text{Fe}_2\text{S}_3$
 (4) $8\text{Fe} + \text{S}_8 \xrightarrow{\Delta} 8\text{FeS}$
37. Sucrose is another name for table sugar is a compound made from the elements carbon, hydrogen and oxygen. Which statement best describes properties of sucrose?
 (1) They are exactly like properties of carbon
 (2) They are exactly like properties of oxygen
 (3) They are exactly like properties of hydrogen
 (4) They are different from the properties of element in sucrose.

38. Which of the following is a way in which elements and compounds are similar?
- (1) Element and compounds are both pure substance
 - (2) Element and compounds are both listed on periodic table
 - (3) Element and compounds are both made up of different atoms
 - (4) Element and compounds can both be broken down by physical change
39. The diagram below shows a magnet near a pile of particle of iron and sulphur. The magnet attracts the iron separating it from the mixture. Based on the diagram, which statement is true?



- (1) The parts of a mixture keeps their own properties
- (2) The elements in a compound keep their own properties
- (3) The properties of a mixture are different from properties of its elements
- (4) The properties of a compound are different from properties of its elements.

40. Which compounds are not found in nature?
- (1) Carbohydrates
 - (2) Protein
 - (3) CO_2
 - (4) None of these
41. If a drink container tells you to "SHAKE WELL" before drinking, the mixture in the container is most likely a
- (1) Solution
 - (2) Suspension
 - (3) Colloid
 - (4) Alloy
42. Concentration means
- (1) How well two substance mix with each other
 - (2) The ability of one substance to dissolve in another
 - (3) The extent to which a compound chemically contries
 - (4) The amount of a particular substance in a given mixture.
44. What is not a way to make solid substance dissolve faster?
- (1) Lowering the temperature of the solvent
 - (2) Stirring the substance
 - (3) Crushing the substance
 - (4) Heating the substance

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
A.	1	4	2	1	3	1	3	2	1	4
Q.	11	12	13	14	15	16	17	18	19	20
A.	2	1	1	2	2	4	3	2	4	2
Q.	21	22	23	24	25	26	27	28	29	30
A.	3	2	3	2	3	1	4	4	3	3
Q.	31	32	33	34	35	36	37	38	39	40
A.	3	1	3	3	1	4	4	1	1	4
Q.	41	42	43							
A.	2	4	1							

3. ATOMIC STRUCTURE

- Which one of the following statement is not true?
 - (1) Most of the space in an atom is empty
 - (2) The total number of neutrons and protons is always equal in a neutral atom
 - (3) The total number of electrons and protons in an atom is always equal.
 - (4) The total number of electrons in any energy level can be calculated by the formula $2n^2$.
- Which of the following element contains only two electrons in the outermost shell ?
 - (1) Helium
 - (2) Beryllium
 - (3) Magnesium
 - (4) All of these
- An atom with 3 protons and 3 neutrons will have a valency of -
 - (1) 3
 - (2) 7
 - (3) 1
 - (4) 4
- The number of electrons in an element X is 15 and the number of neutrons is 16. Which of the following is the correct representation of the element ?
 - (1) $^{31}_{15}\text{X}$
 - (2) $^{31}_{16}\text{X}$
 - (3) $^{16}_{15}\text{X}$
 - (4) $^{15}_{16}\text{X}$
- The isotopes of an element have
 - (1) same number of neutrons
 - (2) same atomic number
 - (3) same mass number
 - (4) None of these
- Select the pair of Isobars from the following species
 $^{37}_{17}\text{A}$, $^{30}_{17}\text{B}$, $^{37}_{18}\text{C}$, $^{36}_{18}\text{D}$, $^{38}_{19}\text{E}$
 - (1) A and B
 - (2) A and C
 - (3) C and E
 - (4) C and D
- Rutherford's α -scattering experiment showed that
 - (i) Electrons have negative charge
 - (ii) The mass and positive charge of the atom is concentrated in the nucleus.
 - (iii) Neutron exist in the nucleus
 - (iv) Most of the space in atom is empty
 - (1) (i) and (iii)
 - (2) (ii) and (iv)
 - (3) (i) and (iv)
 - (4) (iii) and (iv)
- The ion of an element has 3 positive charges. Mass number of the atom is 27 and the number of neutrons is 14. What is the number of electrons in the ion.
 - (1) 13
 - (2) 10
 - (3) 14
 - (4) 16
- Who am I ? My atomic number is 20.
 - (1) A metal of valency 2
 - (2) A gas of valency 2
 - (3) A solid non-metal of valency 2
 - (4) A non-metal of valency 4
- Which of the following mostly accounts for the mass of an atom?
 - (1) Neutrons
 - (2) Neutron and proton
 - (3) Electron and proton
 - (4) Electron and neutron
- Within an atom, the nucleus when compared to the extra nuclear part is -
 - (1) Bigger in volume and heavier in mass
 - (2) Smaller in volume but heavier in mass
 - (3) Smaller in volume and lighter in mass
 - (4) Same size
- The proton is heavier than an electron by -
 - (1) 287 times
 - (2) 1837 times
 - (3) 5837 times
 - (4) 2827 times
- The mass number of an element is 27. If it has 14 neutrons then valence shell of this element is -
 - (1) K
 - (2) L
 - (3) M
 - (4) N
- The mass of the neutron is of the order of -
 - (1) 10^{-23} kg
 - (2) 10^{-24} kg
 - (3) 10^{-16} kg
 - (4) 10^{-27} kg
- Mg^{+2} ion is isoelectronic with
 - (1) Li^+
 - (2) Ca^{+2}
 - (3) Na^+
 - (4) Ba^{+2}
- What would be charge on the atom having 20 protons and 18 electrons ?
 - (1) 1
 - (2) 3
 - (3) 2
 - (4) 4
- Which of the following is Isobar ?
 - (1) $^{235}_{92}\text{U}$, $^{238}_{92}\text{U}$
 - (2) ^3_1H , ^3_2He
 - (3) $^{16}_8\text{X}$, $^{18}_8\text{X}$
 - (4) $^{14}_6\text{C}$, $^{13}_6\text{C}$
- Which of the following isotope is used in carbon dating method ?
 - (1) $^{12}_6\text{C}$
 - (2) $^{13}_6\text{C}$
 - (3) $^{14}_6\text{C}$
 - (4) $^{16}_8\text{O}$
- e/m ratio in anode rays -
 - (1) is constant
 - (2) depends upon the nature of gas
 - (3) depends upon the nature of electron
 - (4) None of these
- 'Atom is divisible'. This fact was proved by _____.
 - (1) Henry Becquerel
 - (2) Ernest Rutherford
 - (3) Neils Bohr
 - (4) William Chadwick
- In an atom, when electron enters from outer shell to inner shell, then energy is
 - (1) absorbed
 - (2) evolved
 - (3) not changed
 - (4) can't say anything

22. Which of the following do not have the same number of valence electrons?
(1) H, Li, Na, K (2) He, Mg, Be, Ca
(3) B, Al, N, P (4) O, S, Se
23. Which one of the following will not show deflection of the path on passing through an electric field?
(1) Proton (2) Cathode rays
(3) Electron (4) Gamma rays
24. Rutherford's experiment which established the nuclear model of an atom used a beam of -
(1) β -particles which impinged on the metal foil and got absorbed
(2) γ -rays which impinged on a metal foil and rejected electrons
(3) Hydrogen atoms, which impinged on a metal foil and got scattered
(4) α -particle nuclei, which impinged on a metal foil and got scattered
25. One isotope of carbon with atomic mass 12 occupies group 14 in the 2nd period in the long form periodic table. Predict the position of another radioactive isotope of carbon with atomic mass 14 ?
(1) Group 14, 3rd period
(2) Group 13, 2nd period
(3) Group 14, 2nd period
(4) Group 14, 4th period
26. Two particles X and Y have the composition as shown in the table. The particles X and Y are
- | Particle | No. of electrons | No. of neutrons | No. of protons |
|----------|------------------|-----------------|----------------|
| X | 10 | 8 | 8 |
| Y | 18 | 18 | 17 |
- (1) Metal atoms (2) Metalloid atoms
(3) Negative ions (4) Positive ions
27. In which of the following pairs, the ions are iso-electronic ?
(1) Na^+ , Ne (2) Al^{+3} , O^-
(3) Na^+ , O^{-1} (4) N^{-3} , Cl^-
28. Which of the following are isotones?
(1) $^{14}_6\text{C}$, $^{15}_7\text{N}$ (2) $^{16}_8\text{O}$, $^{18}_8\text{O}$
(3) ^3_1H , ^3_2He (4) $^{40}_{19}\text{K}$, $^{40}_{20}\text{Ca}$
29. The average atomic mass of a sample of an element X is 16.24. What are the percentages of isotopes $^{16}_8\text{X}$ and $^{18}_8\text{X}$ in sample?
(1) 40%, 60% (2) 90%, 10%
(3) 64%, 34% (4) 70%, 30%
30. The e/m ratio of hydrogen to Helium is
(1) 1:1 (2) 2:1 (3) 1:2 (4) 1:4
31. Rutherford selected a gold foil in his α -ray scattering experiment. Why?
(1) gold foil has high malleability
(2) gold foil has hardness
(3) gold foil has high penetration power
(4) none of these
32. In a sample of ethyl ethanoate ($\text{CH}_3\text{COOC}_2\text{H}_5$) the two oxygen atoms have the same number of electrons but different number of neutrons. Which of the following is the correct reason for it?
(1) One of the oxygen atoms has gained electrons
(2) One of the oxygen atoms has gained two neutrons
(3) The two oxygen atoms are isotopes
(4) The two oxygen atoms are isobars
33. An element X which has seven electrons in its outermost shell X is liquid at room temperature. Identify 'X'.
(1) Bromine (2) Mercury
(3) both (1) and (2) (4) None of these
34. If bromine atoms is available in the form of two isotopes $^{79}_{35}\text{Br}$ (49.7%) and $^{81}_{35}\text{Br}$ (50.3%) . What is the average atomic mass of Bromine atom ?
(1) 16.42u (2) 80.006u
(3) 50.12u (4) 50.3u
35. Which isotope is generally used as a nuclear fuel?
(1) Thorium (2) Uranium-235
(3) Cobalt-60 (4) None of these
36. What is the required pressure inside the discharge tube to obtain cathode rays?
(1) 0.01mm (2) 0.1mm
(3) 0.001mm (4) 1mm
37. Line segment: Point : : Substance: _____.
(1) Atom (2) Particle
(3) molecule (4) nothing
38. $\frac{\text{Mass of Neutron}}{\text{Mass of Electron}} \times 'X'$. Then approximate value of X is -
(1) 2000 (2) 1500
(3) 1800 (4) 1600
39. Which one of the following used for differentiating cancerous tissues from the normal tissue?
(1) $^{131}_{53}\text{I}$ (2) $^{24}_{11}\text{Na}$ (3) $^{23}_{11}\text{Na}$ (4) $^{82}_{15}\text{P}$
40. Which has highest e/m ratio?
(1) He^{+2} (2) H^+
(3) He^+ (4) D^+

41. The increasing order for the values of e/m is
 (1) e, p, n, α (2) n, p, e, α
 (3) n, p, α, e (4) n, d, p, e
42. The fixed circular paths around the nucleus are called _____.
 (1) orbits (2) orbitals
 (3) nucleons (4) mesons
43. The absolute charge of an electron is -
 (1) $-1.6 \times 10^{-19} \text{C}$ (2) $+1.6 \times 10^{-19} \text{C}$
 (3) $1.6 \times 10^{-19} \text{C}$ (4) $16 \times 10^{-19} \text{C}$
44. An electric field deflects beams of
 (1) Protons (2) Electrons
 (3) Neutrons (4) Both (1) and (2)
45. Which of the following statement is wrong about electron ?
 (1) It is a particle
 (2) It has wave like property
 (3) Its motion is affected by magnetic field
 (4) It emits energy while moving in orbit
46. Most penetrating radiation of radioactive element is
 (1) α - rays (2) x - rays
 (3) β - rays (4) γ - rays
47. The heaviest particle among all the four given particles is -
 (1) Meson (2) Electron
 (3) Neutron (4) Proton
48. Alpha particles are fast moving -
 (1) Protons (2) Helium nuclei
 (3) Electron (4) H-atoms
49. When the electrons is brought from infinity to the ground state of the hydrogen atom, then energy is
 (1) Absorbed (2) Not affected
 (3) Emitted (4) Depends on surrounding
50. Which of the following conclusions could not be derived from Rutherford's α -scattering experiment ?
 (1) Most of the space in the atom is empty
 (2) The radius of the atom is about 10^{-10}m while that of nucleus is 10^{-15}m
 (3) Electrons move in a circular path of fixed energy called orbits.
 (4) Electrons and the nucleus are held together by electrostatics forces.
51. The nitrogen atom has 7 electrons, the nitride ion (N^{3-}) will have -
 (1) 7 protons and 10 electrons
 (2) 4 protons and 7 electrons
 (3) 4 protons and 10 electrons
 (4) 10 protons and 7 electrons
52. Which property of elements is not a whole number?
 (1) Mass number
 (2) Atomic number
 (3) Average atomic mass
 (4) None of these
53. The space between the proton and electron in hydrogen atom is -
 (1) filled with air
 (2) empty
 (3) filled with magnetic radiation
 (4) none of the these
54. Atoms consists of electrons, protons and neutrons. If the mass attributed to neutron was halved and that attributed to the electrons was doubled, the atomic mass of $^{12}\text{C}_6$ would be approximately -
 (1) Same (2) doubled
 (3) halved (4) reduced by 25%
55. The species that has same number of electrons as $^{32}_{16}\text{S}$ is -
 (1) $^{32}_{16}\text{S}^{+}$ (2) $^{32}_{17}\text{Cl}^{-}$ (3) $^{32}_{16}\text{S}^{-}$ (4) $^{32}_{17}\text{Cl}^{+}$

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
A.	2	4	3	1	2	2	2	2	1	2
Q.	11	12	13	14	15	16	17	18	19	20
A.	2	2	3	4	3	3	2	3	2	2
Q.	21	22	23	24	25	26	27	28	29	30
A.	2	3	4	4	3	3	1	1	2	2
Q.	31	32	33	34	35	36	37	38	39	40
A.	1	1	1	2	2	3	1	3	2	2
Q.	41	42	43	44	45	46	47	48	49	50
A.	4	1	1	4	4	4	3	2	3	3
Q.	51	52	53	54	55					
A.	1	3	2	4	4					

4. MEASUREMENT OF MATTER

- _____ formulated the law of constant proportion.
(1) Proust (2) Newton (HBBV, 2014)
(3) Lavoisier (4) Mosley
- 1.825 g of HCl in 500 ml of water will make _____. (HBBV, 2014)
(1) 0.1 M HCl (2) 0.05 M HCl
(3) 1 M HCl (4) 0.5 M HCl
- Which of the following pair of elements represent a mole ratio of 1 : 1 ? (HBBV, 2014)
(1) 10 g of Calcium and 12 g of Magnesium
(2) 12 g of Magnesium and 6 g of Carbon
(3) 12 g of Carbon and 20 g of Calcium
(4) 20 g of Sodium and 20 g of Calcium
- Calculate the number of atoms in 5 g of Hydrogen. (HBBV, 2013)
(1) 3.011×10^{24} (2) 1.505×10^{24} atoms
(3) 1.25×10^{23} atoms (4) 7.5275×10^{23} atoms
- Number of molecules present in 1 mole of Hydrogen and 1 mole of Oxygen are respectively _____. (HBBV, 2013)
(1) 6.023×10^{23} and 6.023×10^{23}
(2) 6.023×10^{19} and 6.023×10^{23}
(3) 6.023×10^{24} and 6.023×10^{16}
(4) 6.023×10^{22} and 6.023×10^{23}
- Mass of one Nitrogen atom is _____. (HBBV, 2012)
(1) 6.022×10^{23} kg (2) 6.022×10^{-23} kg
(3) 2.325×10^{-23} kg (4) 2.325×10^{-26} kg
- Number of moles in 500 mg of CO_2 is _____. (HBBV, 2012)
(Atomic mass of C = 12, Molecular mass of O_2 = 32)
(1) 1.1364×10^{-2} mol (2) 6.022×10^{23} mol
(3) 44 mol (4) 1.364×10^2 mol
- For a compound, relative proportion by atomic mass of Iodine and Oxygen, was found to be 254 : 80. What is the molecular formula of the compound?
(Atomic mass of Iodine is 127 and that of Oxygen is 16)
(1) I_2O_5 (2) I_5O_2 (HBBV, 2011)
(3) I_4O_2 (4) O_2I_5

ANSWER KEY

Q.	1	2	3	4	5	6	7	8
A.	1	1	2	1	1	4	1	1

5. CHEMICAL REACTION

1. Which of the following is not an oxidising agent?
 (1) oxygen (2) conc. H_2SO_4
 (3) Cl_2 (4) CO_2
2. Which of the following is not a decomposition?
 (1) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
 (2) $\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$
 (3) $\text{H}_2\text{CO}_3 \rightarrow \text{H}_2\text{O} + \text{CO}_2$
 (4) $2\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$
3. The oxidation reaction which produces heat and light is
 (1) Endothermic (2) Photochemical
 (3) Combustion (4) Exothermic
4. $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S}$. Hydrogen sulphide acting
 (1) an oxidising agent (2) a reducing agent
 (3) a dehydrating agent (4) a catalyst
5. What happened when silver chloride is put under sunlight?
 (1) Silver metal and chlorine gas are formed
 (2) Silver metal and hydrogen gas are formed
 (3) Only silver metal is formed
 (4) Only hydrogen gas is formed
6. Phenomenon in which oil gives a bad taste and bad smell -
 (1) Corrosion (2) Displacement
 (3) Heating (4) Rancidity
7. Which one of the following processes involves chemical reactions?
 (1) Storing of oxygen gas under pressure in cylinder
 (2) Liquefaction of air
 (3) Keeping petrol in China dish in the open
 (4) Heating copper wire in presence of air at high temperature.
8. The formulae for rust is
 (1) CuO (2) $\text{Fe}_2\text{O}_3 \cdot \text{XH}_2\text{O}$
 (3) Al_2O_3 (4) AgS
9. Which of these metal do not corrode?
 (1) Lead (2) Copper
 (3) Platinum (4) Silver
10. The reaction $\text{KNO}_{3(s)} + \text{H}_2\text{O}_{(l)} + \text{Heat} \rightarrow \text{KNO}_3(\text{aq})$ is -
 (1) exothermic (2) Endothermic
 (3) Oxidation (4) Reduction
11. A reaction where precipitate is formed by exchange of ions between the reactants
 (1) Combination
 (2) Decomposition
 (3) Displacement
 (4) Double displacement
12. The rate of a chemical reaction depends upon -
 (1) Initial concentration of reactants
 (2) Temperature
 (3) Use of catalyst
 (4) All of above
13. 10 ml of freshly prepared FeSO_4 solution was taken in each of four test tubes. Strips of Cu, Fe, Zn and Al were introduced in each of the test tube. A black residue was obtained in two of them. The right pair of metals forming the precipitates is -
 (1) Cu and Zn (2) Al and Cu
 (3) Fe and Al (4) Zn and Al
14. Which gas can be used for storage of oil for long time?
 (1) CO_2 or O_2 (2) N_2 or O_2
 (3) CO_2 or He (4) He or N_2
15. When ferrous sulphate crystals are strongly heated the gas vapour not evolved are of -
 (1) SO_2 (2) SO_3
 (3) O_2 (4) H_2O
16. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is
 (1) 1:1 (2) 2:1 (3) 4:1 (4) 1:2
17. The products of this reaction $2\text{KNO}_3 + \text{H}_2\text{CO}_3$
 (1) $\text{K}_2\text{CO}_3 + \text{HNO}_3$ (2) $\text{KH}_2 + \text{NO}_3\text{CO}_2$
 (3) $\text{K}_2\text{CO}_3 + 2\text{HNO}_3$ (4) $2\text{K}_2\text{CO}_3 + \text{HNO}_3$
18. If baking soda a fruit salt is mixed with vinegar there takes place a
 (1) chemical reaction (2) Physical reaction
 (3) both (1) and (2) (4) Transference
19. When crystals of ferrous sulphate are strongly heated, the residue obtained is colour of
 (1) red (2) blue
 (3) green (4) colourless
20. In human body _____ acts as catalyst
 (1) Enzymes (2) Vitamins
 (3) Hormones (4) Minerals
21. During an irreversible chemical reaction the
 (1) concentration of the reactants and product remains same
 (2) concentration of reactants decreases and for products increases
 (3) concentration of reactants increases and for products decreases
 (4) none of the above

22. A student performed the following displacement
 $\text{Fe(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Cu(s)}$
 $\text{Zn(s)} + \text{FeSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Fe(s)}$
 $2\text{Al(s)} + 3\text{ZnSO}_4(\text{aq}) \rightarrow \text{Al}_2(\text{SO}_4)_3(\text{aq}) + 3\text{Zn(s)}$
 Arrange Fe, Zn, Al and Cu in the decreasing order of reactivity on the basis of above reaction are
 (1) $\text{Al} > \text{Zn} > \text{Fe} > \text{Cu}$ (2) $\text{Fe} > \text{Cu} > \text{Zn} > \text{Al}$ (3) $\text{Zn} > \text{Cu} > \text{Fe} > \text{Al}$ (4) $\text{Al} > \text{Zn} > \text{Cu} > \text{Fe}$
23. The following is used for the preparation of oxygen gas in the laboratory

$$2\text{KClO}_3(\text{s}) \xrightarrow[\text{Catalyst}]{\text{Heats}} 2\text{KCl}(\text{s}) + 3\text{O}_2(\text{g})$$

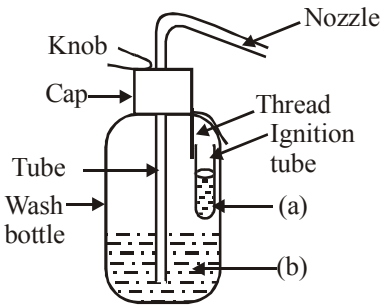
 Which of the following statement are correct?
 (1) It is decomposition and endothermic in nature
 (2) It is a combination reaction
 (3) It is a decomposition reaction and accompanied by release of heat.
 (4) it is a photochemical decomposition and exothermic in nature
24. Which of the following are exothermic processes?
 (a) Reaction of water with quick lime
 (b) Dilution of an acid
 (c) Evaporation of water
 (d) Sublimation of camphor
 (1) a, b (2) b, c (3) a, d (4) c, d
25. When a black and white photographic film is exposed to light the grey colour on the photographic film is due to presence of
 (1) Ag_2O (2) Ag (3) Br_2 (4) all of these
26. Which of the statements about the reaction an incorrect?
 $2\text{PbO(s)} + \text{C(s)} \longrightarrow 2\text{Pb(g)} + \text{CO}_2(\text{g})$
 (a) Lead is getting reduced
 (b) CO_2 is getting oxidised
 (c) Carbon is getting oxidised
 (d) Lead oxide is getting reduced
 (1) a and b (2) a and c
 (3) a, b and c (4) all
27. Aluminium powder was added to a solution of CuSO_4 . The colour of the solution changed from
 (1) Colourless to blue
 (2) Blue to colourless
 (3) Light green to blue
 (4) Reddish brown to light green
28. Copper container can be used to store
 (1) $\text{Al}_2(\text{SO}_4)_3$ solution (2) ZnSO_4 solution
 (3) FeSO_4 solutio (4) All the three
29. $\text{CH}_2 = \text{CH}_2 + \text{Br}_2 \xrightarrow{\Delta} \text{CH}_2\text{Br} - \text{CH}_2\text{Br}$ choose incorrect
 (1) Addition reaction
 (2) Product is 1, 2 dibromoethane
 (3) Combination reaction
 (4) Decomposition
30. $\text{CH}_4 + \text{Cl}_2 \xrightarrow{\text{u.v.rays}} \text{CH}_3\text{Cl} + \text{HCl}$
 (1) Addition reaction (2) Decomposition reaction
 (3) Substitution reaction (4) Displacement reaction
31. $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$ is formula of
 (1) Plaster of Paris (2) Gypsum
 (3) Cement (4) Glass
32. $\text{Cu} + \text{HNO}_3 \longrightarrow \text{Cu}(\text{NO}_3)_2 + \text{YNO} + \text{XH}_2\text{O}$ the value of X and Y are
 (1) 3 and 1 respectively
 (2) 8 and 6 respectively
 (3) 4 and 2 respectively
 (4) 7 and 1 respectively
33. The conversion of $\text{K}_2\text{Cr}_2\text{O}_7$ into $\text{Cr}_2(\text{SO}_4)_3$ is process
 (1) Oxidation (2) Reduction
 (3) Decomposition (4) Substitution
34. An element which never has a positive oxidation state in any of its compound is
 (1) Boron (2) Oxygen
 (3) Chlorine (4) Fluorine
35. The following reaction is an example of a
 $4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \longrightarrow 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}$
 (a) Displacement (b) Combination
 (c) Redox (d) Neutralisation
 (1) a and d (2) b and c
 (3) only c (4) only d
36. Which of the following statement about the given reaction is correct?
 $3\text{Fe(s)} + 4\text{H}_2\text{O(g)} \longrightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$
 (a) Iron metal is getting oxidised
 (b) Water is getting reduced
 (c) Water is acting as reducing agent
 (d) Water is acting as oxidising agent
 (1) a, b and d (2) c and d
 (3) a, b and c (4) b and d
37. The metal which can inhibits the catalytic action of an enzyme is
 (1) Arsenic (2) Mercury
 (3) Both 1 and 2 (4) Neither 1 & 2

38. In the reaction given below a, b, c and d are
 $aC_4H_{10} + bO_2 \longrightarrow cCO_2 + dH_2O$
 (1) 8, 10, 12, 2 (2) 2, 13, 8, 10
 (3) 2, 8, 12, 10 (4) 10, 2, 8, 12
39. Green coating on copper in rainy season is due to
 (1) $CuCO_3$ (2) $Cu(OH)_2$
 (3) $CuCO_3 \cdot Cu(OH)_2$ (4) CuS
40. Two beakers A and B contain Iron (II) Sulphate solution. In the beaker A, a small piece of copper is placed and in the beaker B, a small piece of zinc is placed. It is found that a grey deposit forms on the zinc but not on the copper. It can be concluded that
 (1) Zinc is most reactive metal followed by Fe and Cu
 (2) Zinc is most reactive metal followed by Cu and Fe
 (3) Iron is most reactive metal followed by Zn and Cu
 (4) Iron is most reactive metal followed by Cu and Zn
41. Product of reaction is
 $Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow$
 (1) $PbI_2(aq) + KNO_3(s) \downarrow$
 (2) $PbI_2(s) \downarrow + 2KNO_3(aq)$
 (3) $2PbI_2(s) \downarrow + KNO_3(aq)$
 (4) $PbI_2(s) \downarrow + KNO_3(aq) \downarrow$
42. A dilute $FeSO_4$ solution was gradually added to the beaker containing acidified permanganate solution. The light purple colour of the solution fades and finally disappears which of the following is the correct
 (1) $KMnO_4$ is an oxidising agent, it oxidises $FeSO_4$
 (2) $FeSO_4$ acts as an oxidising agent and oxidises $KMnO_4$
 (3) The colour disappears due to dilution
 (4) $KMnO_4$ is an unstable compound and decompose in presence of $FeSO_4$ is a colourless compound.
43. Solid CaO reacts vigorously with water to form $Ca(OH)_2$ accompanied by liberation of heat. This process is called slaking of lime. $Ca(OH)_2$ dissolves in water to form its solution called lime water. Which among the following are about slaking of lime and the solution formed
 (a) Endothermic reaction
 (b) Exothermic reaction
 (c) The pH of the resulting solution will more than 7
 (d) The pH of the resulting solution will be less than 7
 (1) a and b (2) b and c
 (3) a and d (4) c and d
44. When magnesium ribbon is burnt in air and the ash is collected in a China dish. It contains
 (1) Magnesium oxide only
 (2) Magnesium nitride only
 (3) both magnesium oxide and magnesium nitride
 (4) Magnesium oxide and magnesium carbide
45. Magnesium ribbon is rubbed with sand paper before making it to burn. The reason of rubbing the ribbon
 (1) Remove moisture condensed over the surface of ribbon
 (2) Generate heat due to exothermic
 (3) Remove MgO formed over the surface of magnesium
 (4) Mix silicon from sand paper (SiO_2) with my for lowering ignition temperature of the ribbon

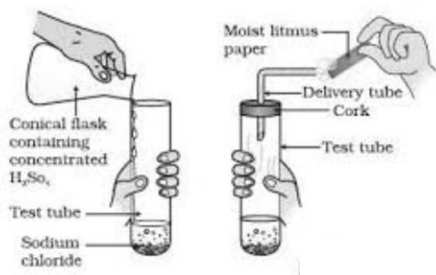
ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
A.	4	2	3	2	1	4	4	2	3	2
Q.	11	12	13	14	15	16	17	18	19	20
A.	4	4	4	4	3	2	3	1	1	1
Q.	21	22	23	24	25	26	27	28	29	30
A.	2	1	1	1	2	1	2	4	1	3
Q.	31	32	33	34	35	36	37	38	39	40
A.	1	3	2	4	3	1	2	2	3	1
Q.	41	42	43	44	45					
A.	2	1	2	3	3					

6. ACIDS BASES AND SALTS

- Which is not a neutralization reaction?
(1) Baking soda and hydrochloric acid
(2) Ammonium hydroxide and Ethanoic acid
(3) Zinc oxide and Phosphoric acid
(4) None of these
- Acidic gas is
(1) CO (2) CO₂ (3) NH₃ (4) N₂O
- Base used during gastrointestinal malfunctioning
(1) NH₄OH (2) Ca(OH)₂
(3) Mg(OH)₂ (4) NaOH
- Ant sting contains
(1) Acetic acid (2) Boric acid
(3) formic acid (4) Tartaric acid
- Milk is
(1) Slightly acidic (2) Neither acidic nor basic
(3) Highly basic (4) Slightly basic
- If concentration of H⁺ ion is 10⁻¹¹, which of the following statements would be right
(1) pOH would be high
(2) H⁺ ion concentration increases
(3) pH decreases
(4) OH⁻ ion increases
- The formula for potash alumn is
(1) KSO₄·Al₂(SO₄)₃·24H₂O
(2) CaCO₃·MgCO₃·12H₂O
(3) K₂SO₄·Al₂(SO₄)₃·24H₂O
(4) K₂SO₄·Al₂SO₄·H₂O
- The nature of the salt CH₃COONH₄ is
(1) Acidic (2) Neutral
(3) Basic (4) None of the above
- The acid base concept of H⁺ and OH⁻ was given by
(1) Bronsted Lowry (2) Arrhenius
(3) Lewis (4) None of the above
- The nature of CuSO₄ is
(1) Acidic (2) Basic (3) Neutral
(4) Cannot be determined
- Which of the following is a pale blue base?
(1) Al(OH)₃ (2) Fe(OH)₂
(3) Ca(OH)₂ (4) Cu(OH)₂
- The nature of (NH₄)₂SO₄ is
(1) Acidic (2) Basic
(3) Neutral (4) Cannot be determined
- What color is shown by universal indicator, when pH is neutral?
(1) Blue (2) Red
(3) Green (4) Yellow
- To 50ml of concentrated HCl acid, 10ml of distilled water is added
(1) The pH would rise
(2) The pH would fall
(3) Dilution would cause neutralizing the pH
(4) The pH would remain unaltered
- An indicator is added to a solution and the solution turns yellow. If the same indicator is added to another type of solution, the color changes to red. The indicator is
(1) Litmus (2) Phenolphthalein
(3) Methyl orange (4) Purple cabbage
- This salt is insoluble in water
(1) Copper carbonate (2) Potassium carbonate
(3) Sodium carbonate (4) Ammonium carbonate
- A concentrated acid X is stored in a glass bottle. A few days after its poured, it is observed that the inner glass color changes to reddish brown. The acid is
(1) HCl (2) H₂SO₄
(3) HNO₃ (4) H₂CO₃
- Amongst the four pH given below, which has the highest pOH value
(1) 4.2 (2) 5 (3) 2 (4) 1.9
- White colored crystal of this compound is available in the market. It is completely soluble in water and is highly basic in nature. The process by which it is separated is Slovary's process.
(1) KCl (2) NaCl (3) NaOH (4) ZnCl₂
- The diagram below represents acid soda fire extinguisher. A and B would most likely be

(1) Hydrochloric acid and sodium hydrogen carbonate
(2) Dilute sulphuric acid and sodium hydrogen carbonate
(3) Hydrochloric acid and sodium bicarbonate
(4) Dilute sulphuric acid and sodium carbonate

21. Gypsum is heated to this temperature to make it lose three water molecules of crystallization per two molecules of gypsum. The optimum temperature for this is
 (1) 110°C (2) 100°C
 (3) 105°C (4) 90°C
22. Green vitriol is
 (1) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ (2) $\text{FeSO}_4 \cdot 5\text{H}_2\text{O}$
 (3) $\text{FeSO}_4 \cdot 6\text{H}_2\text{O}$ (4) None of the above
23. When a metal sulphide is heated with hydrochloric acid, the gas evolved is
 (1) Chlorine (2) Hydrogen sulphide
 (3) Sulphur trioxide (4) Sulphur dioxide
24. Which of this is a deliquescent substance from the following?
 (1) NaCl (2) FeCl_3
 (3) Fe_2O_3 (4) MgO
25. The gas evolved when Ethanoic acid reacts with Sodium carbonate
 (1) CO_2 (2) CO
 (3) H_2O_2 (4) Br_2
26. The gas evolved from the below experiment would most likely be



- (1) O_2 (2) H_2O
 (3) H_2S (4) HCl
27. Lead chloride can be stored in which of the following
 (1) Zinc vessel (2) Magnesium vessel
 (3) Iron vessel (4) Copper vessel
28. pH is neutral for distilled water, but at times it tends to show fluctuations. The reason most suited to the case is
 (1) It is due to Dust particle
 (2) Due to impure water present in distilled water
 (3) Due to salt present on the inner lining of the vessel
 (4) None of the above is right
29. Aluminium Oxide is
 (1) Acidic (2) Basic
 (3) Neutral (4) Amphoteric
30. The calculation of pH is done at this temperature
 (1) 20 degree Celsius (2) 25 degree Celsius
 (3) 23 degree Celsius (4) 30 degree Celsius

31. The salt whose aqueous solution will have no effect on either red litmus or blue litmus is
 (1) Potassium sulphate
 (2) Sodium carbonate
 (3) Ammonium sulphate
 (4) Sodium acetate
32. Reaction between aqueous solution of hydrochloric acid and Ammonia would lead to the formation of
 (1) Ammonium Hydroxide
 (2) No effect
 (3) Formation of chlorine gas
 (4) Formation of ammonium chloride
33. Rusted iron can be made rust free in the laboratory by simply dipping it in
 (1) Sodium Hydroxide (2) Sulphuric acid
 (3) Hydrochloric acid (4) Ferric Chloride
34. Soap Solution is basic, it is formed due to
 (1) Fatty acid reaction with $\text{Ca}(\text{OH})_2$
 (2) Fatty acid reaction with KOH
 (3) Fatty acid reaction with NH_4OH
 (4) Fatty acid reaction with H_2SO_3
35. With observing the table below, which would be the best answer in the statement

Matter	Solubility at 20°C
NaCl - Water	36g
KCl - Water	34g
KNO_3 - Water	31.6g

- (1) Salts of sodium and potassium are equisoluble
 (2) Dissociation of KCl is more than NaCl
 (3) Salts of same metal are less soluble if non-metallic radicals change
 (4) KNO_3 is acidic
36. Neutralization reaction is governed by
 (1) Titration reactions (2) Solubility index
 (3) Qualitative analysis (4) None of these
37. 10 mol of a solution of NaOH is found to be completely neutralized by 8ml of a given solution of HCl , if 20 ml of the same solution of NaOH is taken, the amount of HCl required to neutralize it will be
 (1) 4ml (2) 8ml
 (3) 12ml (4) 16ml
38. The indicator that turns red in acidic solution is
 (1) Turmeric and litmus
 (2) Phenolphthalein and methyl orange
 (3) Litmus and methyl orange
 (4) Phenolphthalein and methyl orange

39. Discomfort caused by indigestion due to overeating can be cured by taking
(1) Vinegar (2) Lemon juice
(3) Baking soda (4) Caustic soda
40. Property common in vinegar and curd is
(1) Have sweet taste (2) Bitter taste
(3) Tasteless (4) Sour
41. The indicator producing pink color in alkaline environment
(1) Methyl orange (2) Turmeric
(3) Phenolphthalein (4) Litmus paper
42. One of the following does not inject an acidic liquid into the skin through its sting
(1) honey bee (2) Ant
(3) Wasp (4) Nettle leaf hair
43. A solution turns phenolphthalein indicator pink. The most likely pH of the solution will be
(1) 6 (2) 4
(3) 9 (4) 7
44. The color of methyl orange indicator in a solution is yellow. The pH of this solution is likely to be
(1) 7 (2) >7 (3) 0 (4) <7
45. Bee sting can be treated with
(1) Vinegar
(2) Sodium hydrogen carbonate
(3) Potassium hydroxide
(4) Lemon juice
46. Wasp sting can be treated with
(1) Baking soda
(2) Vinegar
(3) Washing soda
(4) Milk of magnesia
47. The salt which will give an acidic solution on dissolving in water is
(1) Potassium chloride
(2) Ammonium chloride
(3) Sodium bicarbonate
(4) Sodium acetate
48. The products of Chlor-alkali process are
(1) Sodium, chlorine, Hydrogen
(2) Hydrogen, chlorine and sodium hydroxide
(3) Chlorine sodium bicarbonate and water
(4) Sodium hydroxide, chlorine and hydrochloric acid
49. The number of molecules of water of crystallization present in washing soda crystal is
(1) 5 (2) 2 (3) 10 (4) 7
50. Presence of oxalate ion with hydride ion implies
(1) highly acidic nature
(2) highly basic nature
(3) moderately acidic nature
(4) moderately basic nature

ANSWER KEY

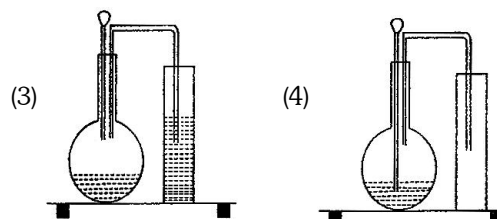
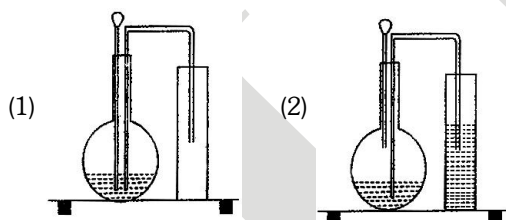
Q.	1	2	3	4	5	6	7	8	9	10
A.	4	2	3	3	1	4	3	2	2	1
Q.	11	12	13	14	15	16	17	18	19	20
A.	4	1	3	1	3	1	2	4	3	2
Q.	21	22	23	24	25	26	27	28	29	30
A.	2	1	2	2	1	4	4	2	4	2
Q.	31	32	33	34	35	36	37	38	39	40
A.	1	4	3	2	3	1	4	3	3	4
Q.	41	42	43	44	45	46	47	48	49	50
A.	3	2	3	2	2	2	2	2	3	3

7. METALS AND NON-METALS

1. Out of 4 elements Cu, Fe, Zn and S most reactive is
 $\text{CuSO}_4 + \text{Fe} \rightarrow \text{FeSO}_4 + \text{Cu}$
 $\text{FeSO}_4 + \text{Zn} \rightarrow \text{ZnSO}_4 + \text{Fe}$
 (1) Zn (2) Fe (3) Cu (4) S
2. One of the minerals of E is E_2O_3 then formula for its sulphate is _____.
 (1) $\text{E}_2(\text{SO}_4)_2$ (2) $\text{E}_2(\text{SO}_4)_3$
 (3) $\text{E}_3(\text{SO}_4)_2$ (4) None of these
3. One of the oxide of E is E_2O_3 The formula for its chlorides is ECl_3 & ECl_5 . Formula for its Sulphide is
 (1) E_2S_3 , E_2S_5 (2) E_3S_3 , E_3S_5
 (3) ES_3 , ES_5 (4) None of these
4. Sulphide of a metal as formula M_2S_3 find formula for its sulphate.
 (1) $\text{M}_2(\text{SO}_4)_2$ (2) $\text{M}_2(\text{SO}_4)_3$
 (3) $\text{M}_3(\text{SO}_4)_2$ (4) None of these
5. Phosphate of a metal shows formula $\text{M}_3(\text{PO}_4)_2$ Find formula for its silicate
 (1) MSiO_3 (2) M_2SiO_3
 (3) $\text{M}_2(\text{SiO}_3)_3$ (4) None of these
6. Phosphate of a metal shows formula M_1PO_4 Find formula for its hypochlorite.
 (1) MOCl (2) M_2OCl
 (3) $\text{M}(\text{OCl})_2$ (4) None of these
7. A metal M combines with Oxygen to form oxide. This oxide combines with water vapour and CO_2 to form basic carbonate M is used to prevent corrosion of iron. So find the metal M.
 (1) Fe (2) Tin (3) Zinc (4) All
8. In the refining of metals by electrolytic process _____ is used as cathode and _____ is used as anode
 (1) Pure metal, Impure metal
 (2) Impure metal, Pure metal
 (3) Graphite & iron
 (4) iron & graphite
9. If sulphur is heated at 1700°C it becomes _____.
 (1) brown liquid. (2) Black tar like substance
 (3) Orange vapour (4) Yellow liquid
10. The metal which can replace calcium from its salt is
 (1) Al (2) Ba (3) Fe (4) K
11. The most reactive of the following metals is
 (1) Ca (2) Al (3) N (4) Pb
12. Which of the following elements is highly resistant to corrosion?
 (1) Iron (2) Nickel (3) Silver (4) Titanium
13. Metal which is the best conductor of electricity
 (1) Nickel (2) Silver (3) Gold (4) Sodium
14. The non-metal which is hard is
 (1) Sulphur (2) Chlorine
 (3) Graphite (4) Diamond
15. Which one of the following is used to preserve food stuff?
 (1) Nitrogen (2) Phosphorus
 (3) Carbon (4) None
16. A metal which is liquid at room temperature is
 (1) Ga (2) Na (3) K (4) Al
17. Which of the following is a property of non-metals?
 (1) Low densities
 (2) Non-malleable and non-ductile
 (3) Poor conductor of electricity
 (4) All the three.
18. An element which is a metalloid
 (1) Antimony (2) Gold
 (3) Arsenic (4) Both 1 and 3
19. Helium has electrons in their valence shell.
 (1) 3 (2) 2 (3) 6 (4) 8
20. Metal which is present in native state is
 (1) S (2) Ce (3) Cu (4) Gold
21. Non-metal reacts with hydrogen to form _____.
 (1) Covalent compounds
 (2) Ionic compounds
 (3) Electrovalent compounds
 (4) Co-ordinate compounds
22. The electrode used in electrolysis is made of
 (1) Phosphorus (2) Graphite
 (3) Zinc (4) Silicon
23. Aluminium foil is used as a medicine wrapper because
 (1) It is cost effective (2) It is malleable
 (3) It is shiny (4) it is ductile
24. Which of the following elements undergoes rusting ?
 (1) Iron (2) Nickel (3) Silver (4) Titanium
25. Amphoteric oxide is
 (1) Na_2O (2) MgO (3) ZnO (4) CaO
26. Which of the following burns with an explosion in contact with water?
 (1) Na (2) Ca (3) Mg (4) Zn
27. Most malleable metal is _____.
 (1) Mg (2) Au (3) Fe (4) Cu
28. The law of triads is applicable to _____.
 (1) C, N, O (2) H, O, N
 (3) Na, K, Rb (4) Cl, Br, I
29. Silver article turns black if used in chemistry lab due to formation of
 (1) Silver nitrate (2) Silver sulphide
 (3) Silver oxide (4) Silver chloride

30. A non-metal which is a good conductor of electricity is _____ .
(1) Phosphorous (2) Diamond
(3) Graphite (4) Sulphur
31. 22 – carat gold is a mixture of
(1) Cu and Au (2) Zn and Au
(3) Al and Au (4) Mg and Au
32. Iron is galvanized when it is dipped in
(1) Molten Zinc (2) Molten Copper
(3) Molten Carbon (4) Molten Gold.
33. A homogenous mixture of two or more metals is
(1) Alloy (2) Allotrope
(3) Isotope (4) isobars
34. Magnalium is an alloy of
(1) Al and Cu (2) Mg and Al
(3) Zn and Al (4) Cu and Zn.
35. Which metal oxide is acidic in nature?
(1) Cu (2) Ce (3) Cr (4) Se
36. Stainless steels are an alloy of
(1) Fe, Cr, C, Ni (2) Fe, Ni, Cr
(3) Cu, Al (4) Fe, Al, Ni
37. Chemical used for making photographic film is
(1) Sodium chloride (2) Silver bromide
(3) Potassium iodide (4) Copper chloride.
38. A non-metal which is stored in water is
(1) Pb (2) Al (3) Cu (4) P
39. $P_4 + 6Cl_2 \rightarrow$
(1) $2P_2Cl_6$ (2) $4PCl_3$ (3) PCl_6 (4) P_2Cl_5
40. Mercury is used in thermometer because _____.
(1) It does not wet the glass
(2) It expands on heating
(3) It is a liquid
(4) All of these
41. The non-metal capable of gaining as well as losing an electron is
(1) Hg (2) Ca (3) C (4) H
42. A nonmetal used to treat rubber in the process of vulcanization is
(1) Sulphur (2) Phosphorous
(3) Carbon (4) Chlorine
43. Metal which reacts vigorously with HCl to produce salt and hydrogen is
(1) Sodium (2) Zinc
(3) Tn (4) Lead
44. In the periodic table all the non-metals are
(1) s-block (2) p-block (3) d-block (4) f-block
45. A crucible used in lab to melt metal is made of
(1) Sulphur (2) Silicon
(3) Graphite (4) Phosphorous
46. Phosphorous combine with oxygen to form types of oxide
(1) Three (2) Two (3) One (4) Four
47. The oxide of non-metal which is neutral is
(1) SO_3 (2) NO_2 (3) CO (4) P_2O_3
48. _____ dissolves in water to produce carbonic acid
(1) CO (2) C (3) CO_2 (4) 2C
49. An element used in computers, T.V. etc. due to its semiconductor properties is
(1) Nitrogen (2) Silicon
(3) Bromine (4) Carbon
50. In the native state metal, is present
(1) As a mixture with a metal.
(2) In pure/elemental form
(3) As a mixture with non-metal
(4) As a mixture with a compound.
51. Aluminium is extracted from bauxite which is an _____.
(1) Oxide ore (2) Carbonate ore
(3) Halide ore (4) Sulphide ore.
52. The formula of magnetite is
(1) Fe_2O_3 (2) Fe_3O_4
(3) Cu_2O (4) CuS
53. Long form of the periodic table was proposed by
(1) Henry Moseley (2) Rang and Warner
(3) Newland (4) Mendeleef
54. Which of the following is a carbonate ore of copper?
(1) Cuprite (2) Pyrite
(3) Copper glance (4) Malachite
55. Acid which can react even with non-metal is
(1) dil. HCl (2) con HCl
(3) dil H_2SO_4 (4) con HNO_3
56. The chemical formula for cryolite is
(1) Al_2O_3 (2) Na_3AlF_6
(3) $Al(OH)_3$ (4) $NaAlO_2$
57. How many of the following configurations represent purely metallic elements? (HBBV, 2014)
2, 8, 7 2, 8, 1 2, 8, 4 2, 8, 3
(1) 1 (2) 2 (3) 3 (4) 4
58. Which of the following information about the reaction of CaO with water is not true? (HBBV, 2014)
(1) CaO reacts with water vigorously
(2) During the reaction the test tube becomes hot
(3) CaO reacts with water to form slaked lime
(4) During the reaction test tube becomes cold
59. Cranes have metallic rope-wires for lifting load because metals _____. (HBBV, 2013)
(1) are hard (2) are malleable
(3) are ductile (4) have tensile strength
60. When Cu reacts with concentrated H_2SO_4 , which of the following statements “does not hold true?”
(1) Sulphur dioxide is produced (HBBV, 2012)
(2) Copper sulphate is formed
(3) One of the by products is water
(4) Oxygen is evolved

61. What is the colour of Methane flame? (HBBV, 2012)
 (1) Blue (2) Yellow (3) Red (4) Green
62. An element X combines with another element Y to form a compound XY₃ Select the correct option for the above reaction. (HBBV, 2011)
 (1) X contains three electrons in its outermost orbit
 (2) Y is a metal
 (3) X gains three electrons during formation of a compound
 (4) Y loses three electrons during formation of a compound.
63. What will happen when Calcium oxide is dissolved in water? (HBBV, 2011)
 a. Reaction will be endothermic
 b. It will give out Oxygen bubbles
 c. Reaction will be exothermic
 d. It will give out Hydrogen
 (1) a and b (2) only c
 (3) b and c (4) only d
64. Which of the following water body will have most saline water? (HBBV, 2011)
 (1) Estuary
 (2) Polar ocean
 (3) Equatorial ocean
 (4) Spring water from mountain peaks
65. Select the correct set up for laboratory preparation of Carbon dioxide. (HBBV, 2011)



Application Based Questions

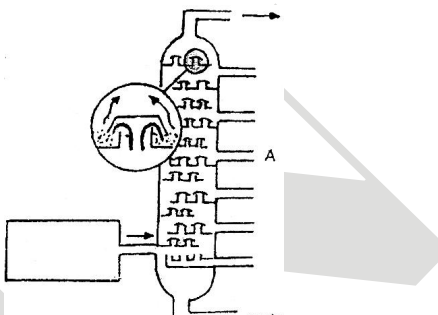
66. $\text{FeO} + \text{C} \rightarrow \text{Fe} + \text{CO}$
 $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$
 In the above reactions
 (1) Carbon is reduced
 (2) Carbon monoxide is oxidized
 (3) Metal oxide is reduced
 (4) Metals oxide is oxidized
67. A, B, C are 3 elements. Correct order of their reactivity is
 $\text{A}_2\text{O}_3 + 2\text{B} \rightarrow \text{B}_2\text{O}_3 + 2\text{A}$
 $3\text{CSO}_4 + 2\text{B} \rightarrow \text{B}_2(\text{SO}_4)_3 + 3\text{C}$
 $3\text{CO} + 2\text{A} \rightarrow \text{A}_2\text{O}_3 + 3\text{C}$
 (1) $\text{A} < \text{B} < \text{C}$ (2) $\text{B} > \text{A} > \text{C}$
 (3) $\text{B} < \text{A} < \text{C}$ (4) $\text{A} > \text{B} > \text{C}$
68. Phosphate of a metal shows formula M_3PO_4 Find formula for its silicate
 (1) MSiO_3 (2) M_2SiO_3
 (3) $\text{M}_2(\text{SiO}_3)$ (4) None of these
69. Metal which does not react with dil. HCl is and metal which remains passive with cone HNO_3 is _____
 (1) Mg, Al (2) Cu, Al
 (3) Na, Ag (4) Fe, Ag
70. Water boilers are made of copper because
 (1) They are very strong
 (2) They are light
 (3) They are cost-effective
 (4) They are good conductor of heat.

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	1	2	1	4	3	1	1	2
Ques.	11	12	13	14	15	16	17	18	19	20
Ans.	1	4	2	4	1	1	4	4	2	4
Ques.	21	22	23	24	25	26	27	28	29	30
Ans.	1	2	2	1	3	1	2	1	2	3
Ques.	31	32	33	34	35	36	37	38	39	40
Ans.	1	1	1	2	3	1	2	4	2	4
Ques.	41	42	43	44	45	46	47	48	49	50
Ans.	4	1	1	2	2	2	3	3	2	3
Ques.	51	52	53	54	55	56	57	58	59	60
Ans.	1	2	1	4	1	2	2	4	4	2
Ques.	61	62	63	64	65	66	67	68	69	70
Ans.	1	1	2	1	4	3	2	2	2	4

8. CARBON AND ITS COMPOUNDS

- L.P.G. mainly contain:
 - Coal tar
 - Iso butane
 - Coal gas
 - Methane
- Which of the following is a renewable source of energy ?
 - Coal
 - Petrol
 - CNG
 - Biogas
- Which of the following is a renewable source of energy?
 - L.P.G
 - C.N.G
 - Kerosene
 - Sewage gas
- C.N.G. stands for
 - Central natural gas
 - Compressed natural gas
 - Combined natural gas
 - Cold natural gas
- Which of the following is not renewable source of energy?
 - Water
 - Wind
 - Biogas
 - Peat
- Out of three Petroleum fractions X, Y, Z with boiling points 80, 140, 105°C. Which one will be distilled out at the top of the distillation tower ?
 - Z
 - Y
 - X & Z
 - X
- Natural gas occurs
 - Above the petroleum oil
 - Below the petroleum oil
 - Along with petroleum oil
 - None of these
- Petroleum is a mixture of
 - Solid hydrocarbon
 - Liquid hydrocarbon
 - Gaseous hydrocarbon
 - All of these.
- Which of the following is not a fossil fuel?
 - Marsh gas
 - Petrol
 - Diesel
 - Kerosene
- Which of the following is used as a fuel?
 - Gasoline
 - Ether
 - Coaltar
 - Slag
- When an oil well is drilled through rocks _____ comes out first .
 - Coal gas
 - Marsh gas
 - Wax
 - None of these
- Coal is formed by process of _____.
 - Carbonization
 - Distillation
 - Vaporization
 - Evaporation
- Coal $\xrightarrow{\text{destructive distillation}}$ _____ + Coal gas
 - Coal tar
 - Coke
 - Charcoal
 - CO₂
- A type of coal which has highest percentage of carbon.
 - Anthracite
 - Bituminous
 - Peat
 - Lignite
- Which fuel is obtained at (A) ?



 - Petrol
 - Diesel
 - Petroleum gas
 - Water gas
- A family requires 30 kg Kerosene per month (30 days). If calorific value of Kerosene is 48 KJ /gm how much is per day average consumption?
 - 24000 KJ
 - 240 KJ
 - 247 KJ
 - 27000 KJ
- Coal gas is a mixture of _____.
 - CH₄ + H₂ + CO₂
 - C₂H₆ + H₂
 - CHO + H₂O
 - C₂H₆ + H₂ + O₂
- The composition of water gas is _____.
 - CO + O₂
 - CO + H₂
 - CO₂ + H₂
 - O₂ + H₂ + C
- The composition of producer gas is
 - CO + N₂
 - CO + H₂
 - CO + CH₄
 - CO + NO₂
- Which of the following has highest calorific value?
 - Petrol
 - Coke
 - Natural gas
 - Kerosene
- Natural gas mainly consist of _____.
 - C₂H₆
 - CH₄
 - C₃H₈
 - C₄H₁₀
- The heat produced by burning 1 gm of fuel completely is known as _____.
 - Heat capacity
 - Calorific value
 - Vapour density
 - Boiling point
- Combustion is a reaction accompanied by heat and light
 - Reduction
 - Redox
 - Substitution
 - Oxidation
- Types of combustion are
 - Rapid
 - Rapid, Slow
 - Explosive
 - Spontaneous

25. The process of burning a substance in the presence of oxygen with evolution of heat is called
 (1) Distillation (2) Carbonisation
 (3) Combustion (4) Refining
26. The minimum temperature at which a substance catches fire is called _____.
 (1) Boiling temperature (2) Ignition temperature
 (3) Melting temperature (4) None of these.
27. Incomplete combustion of methane forms _____.
 (1) $\text{CO}_2 + \text{H}_2\text{O}$ (2) CO
 (3) $\text{CO}_2 + \text{H}_2$ (4) $\text{CO} + \text{O}_2$
28. Which of the following is an example of rapid combustion?
 (1) Candle (2) Cracker
 (3) White phosphorous (4) None of these
29. Synthetic detergents are
 (1) sodium salts of fatty acids
 (2) a mixture of sodium carbonate and sodium chloride
 (3) calcium salts of hydrochloric acid
 (4) a mixture of sodium salts of aromatic and aliphatic sulphonic acids.
30. The condition necessary for combustion is
 (1) Presence of combustion substance.
 (2) Presence of supporter of combustion.
 (3) Attainment of Ignition temperature
 (4) All of these
31. Fire is extinguished by
 (1) Removing all combustible substances
 (2) Cutting of supply of air
 (3) Cooling the burning substance
 (4) All of these
32. Water cannot be used as fire extinguisher to put-out burning _____.
 (1) wood (2) oil
 (3) cloth (4) charcoal
33. Which of the following is an example of spontaneous combustion?
 (1) H_2 (2) candle
 (3) charcoal (4) CO
34. In foam type fire extinguisher _____ is responsible to put off fire
 (1) H_2O (2) $\text{CO}_2 + \text{H}_2\text{O}$
 (3) CO_2 (4) CO
35. Which of the following property is not characteristic of a good fuel ?
 (1) High ignition temperature
 (2) Low cost
 (3) Causes minimum pollution
 (4) Readily available
36. The type of combustion in which heat, light and sound is produced is _____.
 (1) Rapid (2) Explosion
 (3) Spontaneous (4) None of these
37. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2 + 385 \text{ KJ}$. Find calorific value of carbon.
 (1) 32 KJ/gm (2) 38.5 KJ/gm
 (3) 12 KJ/gm (4) None of these
38. Producer gas is not a good fuel because
 (1) It contains CO which is poisonous
 (2) It contains CO_2
 (3) It contains CO_2 which does not burn
 (4) It contains N_2 which does not burn
39. The zone of flame having maximum temperature is
 (1) Luminous (2) Non-luminous
 (3) Dark zone (4) None of these
40. Out of three Petroleum fraction A, B, C with boiling points 170, 240, 325 C. Which one be distilled out at the base of the distillation tower?
 (1) A & B (2) B (3) C (4) A
41. _____ is the zone of combustion of gaseous fuel
 (1) Light (2) Flame
 (3) Heat (4) None of these
42. Outermost zone of flame is called _____.
 (1) Luminous zone (2) Non-luminous zone
 (3) Dark zone (4) None of these
43. Luminous zone of flame is _____.
 (1) Outermost-zone (2) Middle-zone
 (3) Innermost-zone (4) Dark-zone
44. The fuel having maximum calorific value
 (1) $\text{C}_3\text{H}_7\text{OH}$ (2) C_2H_6
 (3) C_3H_8 (4) $\text{C}_3\text{H}_7\text{COOH}$
45. Allotropes differs in the :
 (1) Number of neutrons
 (2) Number of protons
 (3) Way their atoms are arranged
 (4) Number of electrons
46. Which of the following does not show catenation?
 (1) Carbon (2) S
 (3) P (4) Chlorine
47. Coke contains carbon
 (1) 96% (2) 90%
 (3) 98% (4) 70%
48. Diamond is a bad conductor of electricity due to _____.
 (1) Absence of free electron
 (2) Hard in nature
 (3) Transparent
 (4) High refractive index.

49. Destructive distillation of wood does not give _____.
(1) Wood tar (2) Wood charcoal
(3) CO (4) CO₂
50. In diamond, the C-atoms are arranged in _____.
(1) Octahedral (2) Tetrahedral
(3) Planer (4) Trigonal
51. In diamond, each C-atom is joined to _____ carbon atoms.
(1) Two (2) Four
(3) One (3) Three
52. The number of free electron in each carbon atom of graphite are is
(1) Two (2) Four
(3) One (4) None
53. In graphite, the C-atom is arranged in _____.
(1) Tetrahedral
(2) Octahedral
(3) Hexagonal planar rings
(4) None of these
54. _____ is used as dry lubricant.
(1) Diamond (2) Coke
(3) Charcoal (4) Graphite
55. Diamond is soluble in _____.
(1) Alcohol (2) Petrol
(3) Water (4) None of these
56. $C_{12}H_{22}O_{11} \rightarrow 12C + 11 H_2O$ the carbon obtained in the reaction is:
(1) Animal charcoal (2) Sugar charcoal
(3) Coke (4) Wood charcoal
57. _____ is used for making printer ink, shoe polish
(1) Graphite (2) Coke
(3) Lampblack (4) Coal
58. Destructive distillation of wood gives _____.
(1) Coal tar (2) Wood charcoal
(3) Coal gas (4) CO₂
59. Due to its absorbing property is used to remove bacteria from drinking water _____.
(1) Graphite (2) Coke
(3) Lampblack (4) Activated chart
60. Coal, on destructive distillation gives _____.
(1) Charcoal (2) Coke
(3) C-black (4) Animal charcoal
61. Formula for propyne is _____.
(1) C₂H₂ (2) C₂H₄
(3) C₃H₄ (4) C₃H₆
62. Fullerenes is a cluster of atom held in a cage like structure. _____.
(1) Carbon (2) Silicon
(3) Oxygen (4) Hydrogen
63. _____ is used for cutting and grinding tools :
(1) Diamond (2) Graphite
(3) Coke (4) Coal
64. CO₂ dissolved rapidly in water if:
(1) Temperature is increased
(2) Pressure is increased
(3) Both of 1 and 2
(4) None of these
65. $CH_3COONa + NaOH \xrightarrow{cao} Na_2CO_3 + ?$
(1) CH₄ (2) CO₂ (3) C₃H₆ (4) C₄H₁₀
66. The dehydration of oxalic acid by con. H₂SO₄, gives mixture of
(1) CO + H₂ (2) CO + CO₂
(3) CO₂ + H₂ (4) CH₄ + H₂
67. Test for CO is _____.
(1) It turns lime water milky
(2) It turns redd litmus blue
(3) It burns with blue flame
(4) None of these
68. Wood charcoal is used in gas masks because
(1) It has low ignition temperature
(2) It is a reducing agent
(3) It absorbs harmful gases
(4) It is a bad conductor of heat
69. Methane gas is collected by downward displacement of water because
(1) Methane is lighter than air
(2) Methane is insoluble in water
(3) Both 1 and 2
(4) None of these
70. Destructive distillation of wood is heating of wood
(1) in the absence of air
(2) in excess of air
(3) in limited supply of air
(4) none of these.
71. Wood charcoal is an excellent fuel because
(1) Its ignition temperature is low
(2) It bums without smoke
(3) It has absorbing property
(4) Both 1 and 2
72. Diamond shines due to its
(1) High density (2) High refractive index
(3) High melting point (4) None of these

73. Ammonical liquor obtained during destructive distillation of coal is used for making:
 (1) Polymer (2) Plastic
 (3) Fertilizer (4) None of these
74. Arrange the following in descending order of Carbon content. (HBBV, 2012)
 a. Anthracite b. Bituminous
 c. Lignite d. Peat
 (1) a, b, c, d (2) b, c, a, d
 (3) c, a, d, b (4) a, d, c, b
75. Which of the following is used to find out age of fossils?
 (1) C^{14} (2) C^{60} (HBBV, 2012)
 (3) C^{12} (4) C^{13}
76. Which of the following is not a Carbon compound? (HBBV, 2011)
 (1) Feathers (2) Polythene
 (3) Caustic soda (4) Cork
77. Graphite is not used for _____. (HBBV, 2011)
 (1) insulation (2) lubrication
 (3) illumination (4) writing
78. Which of the following does not exhibit allotropy?
 (1) Sulphur (2) Boron (HBBV, 2011)
 (3) Phosphorus (4) Carbon

Application Based Questions

79. Petroleum is refined by
 (1) Fractional distillation (2) Destructive distillation
 (3) Distillation (4) All of these
80. A family requires 1(4)5 kg LPG per month (30 days). If calorific value of LPG is 55 KJ /gm how much is per month consumption?
 (1) 8785000 KJ (2) 279991 KJ
 (3) 79050 KJ (4) 797500 KJ
81. In soda-acid fire extinguisher $2NaHCO_3 + H_2SO_4$ gives _____.
 (1) $Na_2SO_4 + 2H_2O + 2CO_2$
 (2) $Na_2SO_4 + CO_2 + O_2$
 (3) $Na_2SO_4 + H_2O + O_2$
 (4) $Na_2SO_4 + H_2O_2$
82. $CH_4 + O_2 \rightarrow CO_2 + H_2O + 384 \text{ KJ}$ Find calorific value of Methane.
 (1) 24 KJ/gm (2) 38.5 KJ/gm
 (3) 12 KJ/gm (4) None of these
83. The carbon obtained by destructive distillation of sugar is: _____.
 (1) Sugar charcoal (2) Animal charcoal
 (3) Coke (4) Wood charcoal

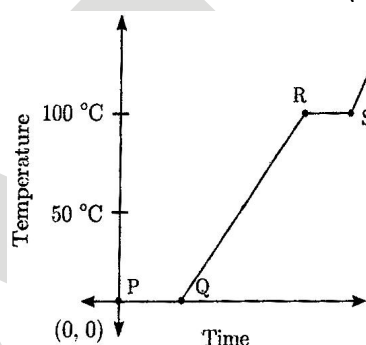
ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10
Ans.	2	4	4	2	4	4	1	4	1	1
Ques.	11	12	13	14	15	16	17	18	19	20
Ans.	4	1	1	1	2	1	1	2	1	1
Ques.	21	22	23	24	25	26	27	28	29	30
Ans.	2	2	4	2	3	2	2	2	4	4
Ques.	31	32	33	34	35	36	37	38	39	40
Ans.	4	2	1	2	1	2	1	4	2	2
Ques.	41	42	43	44	45	46	47	48	49	50
Ans.	1	2	2	2	3	4	3	1	4	2
Ques.	51	52	53	54	55	56	57	58	59	60
Ans.	2	3	3	4	4	2	3	2	4	2
Ques.	61	62	63	64	65	66	67	68	69	70
Ans.	3	1	1	2	1	2	3	3	3	1
Ques.	71	72	73	74	75	76	77	78	79	80
Ans.	4	2	3	1	1	3	1	2	1	4
Ques.	81	82	83							
Ans.	1	1	1							

9. SUBSTANCES IN COMMON USE

- When copper is treated with dilute nitric acid we get _____ gas.
(1) NO_2 (2) NO (3) N_2O (4) N_2O_5
- When copper is treated with conc. nitric acid we get _____ gas.
(1) NO_2 (2) NO (3) N_2O (4) N_2O_5
- Which one of the following metal then treated with hot conc. sulfuric acid liberates SO_2 gas?
(1) Ag (2) Cu (3) Al (4) All
- (a) $\text{Ag}_2\text{S} + 4 \text{NaCN} \rightarrow 2\text{Na}[\text{Ag}(\text{CN})_2] + \text{Na}_2\text{S}$
(b) $2\text{Na}[\text{Ag}(\text{CN})_2] + \text{Zn} \rightarrow 2\text{NaCN} + \text{Zn}(\text{CN})_2 + 2\text{Ag}$
with respect to above reactions which one of the statements is incorrect?
(1) Reaction (a) is double decomposition reaction
(2) Reaction (b) is displacement reaction
(3) Zinc is less reactive than Ag.
(4) Ag is less reactive than Zinc.
- Yellow phosphorus gives cold flame because
(1) Yellow phosphorus is soluble in CS_2
(2) Ignition temperature of Yellow phosphorus is 30°C
(3) In Yellow phosphorus atoms are joined by weak bonds
(4) None of these
- Which of the following statements are incorrect?
i) Graphite can be converted to diamond
ii) diamond can be converted to Graphite
iii) Using iodine as a catalyst Yellow phosphorus can be converted to red phosphorus
iv) Alpha sulphur is stable below $9(2)4^\circ\text{C}$
v) At higher temperature beta sulphur gets converted to alpha sulphur.
(1) ii & v are wrong (2) ii & iii are wrong
(3) iii & iv are wrong (4) None of these
- What will happen when chlorine gas is passed through hot NaOH solution?
(1) Sodium chlorate (2) Sodium hypochlorite
(3) Sodium chloride (4) None of these
- Which one of the following is test to detect halide?
(1) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{NaNO}_3 + \text{AgCl} \downarrow$
(2) $\text{CuSO}_4 + \text{Ba}(\text{NO}_3)_2 \rightarrow \text{BaSO}_4 + \text{Cu}(\text{NO}_3)_2$
(3) $\text{KCl} + \text{I}_2 \rightarrow \text{KI} + \text{Cl}_2$
(4) None of these
- The number of atoms present in a molecule of an element is known as
(1) Allotropy (2) Isomerism
(3) Electrolysis (4) Atomicity
- Crystals which are referred as hydrated crystals are the:
(1) Salts which are insoluble in water
(2) Salts which do not contain water
(3) Salts which contain water of crystallization
(4) Salts which are soluble in water
- Crystalline nature of crystals is lost on:
(1) Shaking (2) Cooling
(3) Boiling (4) Heating
- Mixture of sulphur and turmeric powder can be separated by
(1) Filtering (2) Cooling
(3) Freezing (4) Boiling
- In fractional distillation of petroleum, the liquid with the highest boiling point condenses in
(1) Top most tray (2) Middle tray
(3) Lower tray (4) Any tray
- Mixture of diesel and water can be separated by
(1) Filtration (2) Using separating funnel
(3) Sublimation (4) Crystallisation
- Two miscible liquids can be separated by distillation when there is a large difference in their
(1) Melting point (2) Boiling point
(3) Volatilization (4) Freezing point
- In fractional distillation of petroleum, LPG is collected.
(1) at 170°C (2) 250°C
(3) above 400°C (4) Below 40°C
- In fractional distillation of petroleum, the fraction collected between $40^\circ\text{--}170^\circ\text{C}$ is
(1) Lubricating oil (2) Kerosene
(3) Petrol (4) Fuel oil
- The foul substance added to detect leakage of LPG is
(1) Alcohol (2) Ethane
(3) Ethyl mercaptan (4) Acetone
- Chemical formula for rust is
(1) $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ (2) $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
(3) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (4) $\text{FeSO}_9 \cdot 2\text{H}_2\text{O}$
- $\text{AgNO}_3 + \text{KCl} \rightarrow \text{AgCl} + \text{KNO}_3$, is an example of
(1) Endothermic reaction
(2) Displacement reaction
(3) Double displacement
(4) Combination reaction
- Reddish brown coloured precipitate is
(1) Copper hydroxide (2) Boric hydroxide
(3) Cadmium sulphide (4) None of these
- $\text{Cu}(\text{NO}_3)_2 \rightarrow \text{CuO} + \text{X} + \text{Y}$. X, Y represent
(1) N_2, O_3 (2) NO_2, O_2
(3) NO, NO_2 (4) None of these
- $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \rightarrow \text{PbI}_2 + 2\text{KNO}_3$. The colour of the precipitate formed.
(1) White
(2) Golden Yellow
(3) Red
(4) Orange

24. In the reaction $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$, Mg undergoes
 (1) Reduction
 (2) Oxidation
 (3) Oxidation as well as reduction
 (4) Neither oxidation nor reduction
25. _____ is used in tooth paste.
 (1) $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ (2) FeSO_4
 (3) MgCO_3 (4) Al_2O_3
26. In the reaction, $\text{H}_2\text{S} + \text{SO}_2 \rightarrow 2\text{H}_2\text{O} + 3\text{S}$, the substance that is oxidised is
 (1) H_2S (2) SO_2 (3) S (4) H_2O
27. Formation of SO_3 from SO_2 and O_2 is a reaction _____.
 (1) Combination (2) Decomposition
 (3) Displacement (4) Redox
28. _____ is an example of photochemical reaction.
 (1) Calcinations (2) Neutralization
 (3) Photosynthesis (4) Rusting
29. Sodium can be stored in kerosene, because
 I) Sodium gets oxidised easily (HBBV, 2014)
 II) Sodium is highly reactive with water
 III) Kerosene is an inert hydrocarbon
 IV) Density of Sodium is higher than kerosene
 1 I and II (2) I, II and III
 (3) III and IV (4) I, II, III and IV
30. Observe the following graph of an experiment of conversion of ice into water and water into ice. Select false statement in case of these observations?
 (HBBV, 2014)



- (1) Temperature remains steady during change of state
 (2) Process of boiling takes more time than melting
 (3) Ice will start floating on water at point Q
 (4) Dimensions of graph will vary according to pressure conditions
31. Select a group of elements showing same atomicity.
 (1) Phosphorus, Sulphur, Carbon (HBBV, 2014)
 (2) Oxygen, Helium, Hydrogen
 (3) Helium, Argon, Chlorine
 (4) Oxygen, Nitrogen, Chlorine

32. Which of the following elements are present in cellulose?
 (1) Carbon, Hydrogen, Oxygen (HBBV, 2014)
 (2) Hydrogen, Oxygen, Nitrogen
 (3) Carbon, Nitrogen, Oxygen
 (4) Carbon, Hydrogen, Iron
33. What is the similarity in Sodium bicarbonate and Sodium carbonate?
 (1) Number of atoms (2) Molecular formula
 (3) Structural formula (4) Physical properties
34. When concentrated sulphuric acid is slowly poured on sugar, sugar turns into black spongy mass. What is the role of sulphuric acid in this process?
 (HBBV, 2014)
 (1) A reducing agent (2) A dehydrating agent.
 (3) An Oxidizing agent (4) A catalyst
35. Which of the following radicals is monovalent?
 (1) Chlorate (2) Oxide (HBBV, 2014)
 (3) Sulphite (4) Sulphate
36. In wafer packets Nitrogen is used to keep waters crisp because
 (HBBV, 2013)
 (1) it is major component of air
 (2) it is non-reactive.
 (3) it absorbs moisture
 (4) it acts as antifungal agent
37. When Copper sulphate crystals are heated in a dry test tube, some water droplets are observed in the test tube. This water is
 (HBBV, 2013)
 (1) atmospheric moisture
 (2) water of hydration
 (3) water of crystallisation
 (4) water of sublimation
38. Which of the following represents cane-sugar (sucrose)?
 (HBBV, 2013)
 (1) $\text{C}_6\text{H}_{12}\text{O}_6$ (2) $\text{C}_6\text{H}_{12}\text{O}_3$
 (3) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (4) $\text{C}_6\text{H}_{22}\text{O}_6$
39. Select the incorrect option for O_2 and CO_2 :
 (1) Both are colourless and odourless gases
 (2) CO_2 is collected by upward displacement of air in laboratory preparation (HBBV, 2013)
 (3) O_2 is freely soluble in water
 (4) O_2 is collected by downward displacement of water in laboratory preparation
40. Choose the odd one out on the basis of type of mixture.
 (HBBV, 2012)
 (1) Calamine solution (2) Milk
 (3) Hair spray (4) Smoke
41. What is oil of vitriol?
 (HBBV, 2012)
 (1) Aqua regia (2) H_2SO_4
 (3) HNO_3 (4) HCl

42. What is wood made of _____? (HBBV, 2012)
a. Humus b. Cellulose c. Lignin
(1) a and b (2) a, b and c
(3) a and c (4) b and c
43. Glass is a _____. (HBBV, 2012)
(1) compound (2) mixture
(3) solid (4) 2 and 3 both
44. How many atoms are there in the following compound?
 $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$ (HBBV, 2011)
(1) 34 (2) 96 (3) 42 (3) 45

Application Based Questions

45. Yellow phosphorus is more reactive than red phosphorus because
(1) Red phosphorus is crystal lattice structure
(2) In Yellow phosphorus atoms are joined by weak bonds
(3) Yellow phosphorus is soluble in CS_2
(4) Ignition temperature of Yellow phosphorus is $300^\circ C$

46. Which one of the above reactions is oxidation reaction?
(1) $2SbCl_3 + 3H_2S \rightarrow 6HCl + Sb_2S_3$
(2) $2KMnO_4 + 3H_2S \rightarrow K_2SO_4 + 2MnSO_4 + 8H_2O + 5S \downarrow$
(3) $K_2Cr_2O_7 + 4H_2SO_4 + 3H_2S \rightarrow K_2SO_4 + K_2 + (SO_4)_3 + 7H_2O + 3S \downarrow$
(4) $S + 6HNO_3 \rightarrow H_2SO_4 + 6NO_2 + 2H_2O$
47. $H_2S + Cl_2 \rightarrow HCl + S$, in the reaction, the substance that is oxidised is
(1) Sulphur (2) Hydrogen
(3) H_2S (4) Chlorine
48. $H_2S + Cl_2 \rightarrow 2HCl + S$, the reducing agent is
(1) Cl_2 (2) S (3) H_2S (4) HI
49. Cl_2 gas when passed through lime water, it becomes milky due to formation of _____.
(1) Bleaching powder (2) Smelling salt
(3) Epsom salt (4) Baking powder

ANSWER KEY

Ques	1	2	3	4	5	6	7	8	9	10
Ans.	2	1	4	3	4	1	1	1	4	3
Ques	11	12	13	14	15	16	17	18	19	20
Ans.	4	1	3	2	2	4	3	3	2	3
Ques	21	22	23	24	25	26	27	28	29	30
Ans.	4	2	2	2	3	1	1	3	4	3
Ques	31	32	33	34	35	36	37	38	39	40
Ans.	4	1	1	2	1	2	3	3	3	1
Ques	41	42	43	44	45	46	47	48	49	
Ans.	2	4	2	2	2	4	3	3	1	